

**Remarks**

The Final Office Action dated March 11, 2003 has been carefully reviewed and the foregoing amendments are made in response thereto. In view of these amendments and the following remarks, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Claim 35 has been cancelled without prejudice or disclaimer of Applicants' right to pursue the subject matter of this claim in a divisional application. Claims 24, 26-28, and 30-34 have been amended to better define the claimed invention. Applicants respectfully submit that no new prohibited matter has been introduced by these amendments. Written description support for the amendments and additional claim can be found throughout the specification and in the original claims.

**Summary of the Office Action**

1. Claims 25, and 27-29 were restricted for being directed to an invention that is independent or distinct from the invention originally claimed. Claims 30 and 34-36 were restricted as far as they depend from claims 25 and 27-29.

2. Claims 31-33 were rejected under 35 U.S.C. 112 (first paragraph) as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor had possession of the claimed invention.

3. Claim 34 was rejected under 35 U.S.C. 112 (first paragraph) as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to make and/or use the invention.

4. Claims 24 and 30 were rejected under 35 U.S.C. 102(b) as being anticipated by Sala *et al.* (1994) J. Virol. 68, 5280-5283 and Lukashov *et al.* (1996) SPTREMBL\_17 database; Accession No. Q69692.

5. Claim 26 was rejected under 35 U.S.C. 103(a) as being unpatentable over Sala *et al.* (1994) J. Virol. 68, 5280-5283.

6. Claims 35 and 36 were rejected under 35 U.S.C. 103(a) as being unpatentable over Sala *et al.* (1994) J. Virol. 68, 5280-5283 in view of Haynes *et al.* (U.S. Patent 5,019,387).

7. Claims 2 and 23 were found to be allowable.

**Correction of Sequence Listing**

Applicants have attached a declaration under 37 C.F.R. 1.132 by Gerald V. Quinnan which sets forth the circumstances in which an error in SEQ ID NO: 1 (HIV envelope protein gp160, R2 strain) in the as-filed specification and sequence listing was discovered. The attached substitute sequence listing and amendment to Table 3 on page 33 of the specification are necessary to correct this error. Applicants respectfully request that the substitute sequence listing and the amendment to the specification be entered.

**Response to Second Restriction Requirement**

The Office Action withdrew claims 25 and 27-29 from consideration as being directed to a non-elected invention. In addition, claims 30 and 34-36 as they depend from claims 25 and 27-29 were considered by the Examiner to be directed to an invention that is independent or distinct from the invention originally claimed. The Office Action indicates that the claims were grouped so that one invention was drawn toward the amino acid sequence comprising SEQ ID NO: 1 and the other invention was drawn toward the amino acid sequence comprising SEQ ID NO: 24.

Applicants bring to the attention of the Examiner that the Restriction Requirement dated January 30, 2002 identified claims 1-6 and 21 (Group I) as constituting a single invention drawn to an isolated HIV envelope protein. The Applicants subsequently elected to prosecute the claims of Group I. Claim 4, which was drawn to an isolated HIV envelope protein or fragment thereof comprising the amino acid sequence PMX<sub>1</sub>X<sub>2</sub>X<sub>3</sub>X<sub>4</sub>X<sub>5</sub>X<sub>6</sub>X<sub>7</sub>X<sub>8</sub>X<sub>9</sub>X<sub>10</sub>Q was included in the elected group. Claims 25 and 27 are drawn to an HIV envelope protein or fragment thereof having the amino acid sequence PMGPGRAFYTGGQ (SEQ ID NO: 24) or conservative amino acid substitutions at positions 3-9 of the amino acid sequence. Applicants submit that the inventions in claims 25 and 27-29 fall within the scope of the elected invention in claim 4. The sequence disclosed in claims 25 and 27-29 is one possible variation of the sequence disclosed in claim 4. Furthermore, SEQ ID NO: 24 was previously considered in the original restriction requirement to be part of the single invention drawn to an isolated HIV envelope protein. As such, claims 25 and 27-29 should not be considered a separate invention as the Applicants elected to prosecute those claims drawn to an isolated HIV envelope protein in their response dated March 29, 2002. Applicants respectfully request withdrawal of the second restriction requirement.

**Rejections under 35 U.S.C. 112 (first paragraph)**

The Office Action rejected claims 31-33 under 35 U.S.C. 112 (first paragraph) purportedly because the claims as written contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the Applicants had possession of the claimed invention at the time the application was filed. Specifically, the Examiner states that the claims are drawn to a genus of proteins that are defined only by sequence identity. Although Applicants disagree with this position, Applicants have amended claims 31-33 so that they are dependent on amended claim 24. Accordingly, these amended claims incorporate all the limitations of the claims from which they depend.

In addition, the Office Action rejected claim 34 under 35 U.S.C. 112 (first paragraph) purportedly because the claim contains subject matter that was not described in a manner as to enable one skilled in the art to make and/or use the invention. Specifically, the Examiner rejected the claim for being drawn to a vaccine as one of skill in the art would doubt the efficacy of the claimed vaccine. Even though Applicants disagree with this position, this claim has been amended and is now drawn toward a composition comprising an isolated HIV-1 envelope protein of the claimed invention. In view of these claim amendments, Applicants respectfully request that the rejections be withdrawn.

**Rejections under 35 U.S.C. 102(b)**

Claims 24 and 30 were rejected under 35 U.S.C. 102(b) as being anticipated by Sala *et al.* or Lukashov *et al.* The Office Action states that the references disclose an HIV envelope protein fragment that is at least 13 amino acids in length comprising the required amino acid residues in the required position numbers of SEQ ID NO: 1. In addition, the Examiner states that because the protein fragments of Sala *et al.* or Lukashov *et al.* comprise the required structural features specified by the claims, the fragments also inherently possess the ability to produce antibodies against HIV-1 strains *in vitro*. Although Applicants respectfully disagree, these claims has been amended so that they are now drawn to an isolated HIV envelope protein comprising SEQ ID NO:1 or a fragment thereof of at least 37 amino acids. Neither Sala *et al.* nor Lukashov *et al.* disclose an amino acid sequence of at least 37 amino acid residues. Thus, neither reference discloses nor suggests each and every element of claim 24 or 30. In the absence of disclosure in the cited references of a sequence comprising SEQ ID NO: 1 or a fragment thereof of at least 37 amino acids, Applicants request that the rejection of claims 24 and 30 be withdrawn.

**Rejections under 35 U.S.C. 103(a)**

Claim 26 was rejected under 35 U.S.C. 103(a) as being unpatentable over Sala *et al.* or Lukashov *et al.* The Examiner states that while neither reference teaches the entire glycoprotein, the amino acid sequence of the fragment taught by either reference nonetheless renders the claimed HIV envelope protein from which the V3 sequence is derived as obvious. Applicants respectfully disagree. As the Examiner noted in the Office Action dated June 18, 2002 (Paper 11), "hypervariability of sequences among the different HIV strains is a well recognized concern in the HIV art" (see page 6, lines 14-15). Given this statement, it is not possible that one can assume anything from a partial sequence of an envelope protein with regard to the remainder of the envelope protein sequence.

Claims 35 and 36 were also rejected under 35 U.S.C. 103(a) as being unpatentable over Sala *et al.* or Lukashov *et al.* in view of Haynes *et al.* (US 5,993,819). The Examiner states that the skilled artisan would have been motivated to combine the disclosure of Haynes *et al.* relating to induction of antibodies with HIV proteins, with the disclosure of the envelope sequences of Sala *et al.* to arrive at the claimed invention. Claim 35 has been canceled without prejudice and disclaimer and therefore the rejection is moot with regard to this claim.

With regard to claim 36, Applicants bring to the attention of the Examiner that neither Sala *et al.* nor Lukashov *et al.* disclose an HIV envelope protein meeting the limitations of the amended claims. In order for one skilled in the art to combine either Sala *et al.* or Lukashov *et al.* with Haynes *et al.* to generate antibodies comprising the limitations of the claimed invention, it would have been necessary for the artisan to know the entire amino acid sequence of SEQ ID NO: 1. At the time of the invention, the complete amino acid sequence of SEQ ID NO: 1 was not known in the art. Thus, there would have been no motivation to modify non-existent teachings with Haynes *et al.* to arrive at the claimed invention. The Office Action has used impermissible hindsight to fill the gaps present in the references and used Applicants' own disclosure to construct an improper hindsight rejection of the pending claim. Applicants respectfully assert that without a teaching in the cited references of the claim limitations, there could not have existed motivation to modify the references to arrive at the claimed invention. Without these elements, a prima facie case of obviousness has not been established. Therefore, Applicants respectfully request that the rejection be withdrawn.


**Conclusion**

The foregoing amendments and remarks are being made to place the application in condition for allowance. Applicants respectfully request reconsideration and the timely allowance of the pending claims. A favorable action is awaited. Should the Examiner find that an interview would be helpful to further prosecution of this application, they are invited to telephone the undersigned at their convenience.

**Except** for issue fees payable under 37 C.F.R. 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account 50-0310. This paragraph is intended to be a **Constructive Petition for Extension of Time** in accordance with 37 C.F.R. 1.136(a)(3).

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Respectfully submitted  
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